

## Appendix C. DOCUMENTATION STANDARDS

### A. General

The standards for data format standards and naming contained in this appendix shall be used in preparation of the contract drawings and other submitted documents. These standards generally describe various technical features and requirements of drawings and specific information that must be included on the drawings but is not intended to be a complete list of all features. All work done for the A-E by sub-consultants is regarded as work done by the A-E. Work that does not conform to this standard is the responsibility of the A-E.

### B. Electronic Media

**B.1 Electronic Media:** Work may be submitted on the following electronic media (given in order of USCG preference): CD-ROM disc in JOLIET or ISO 9660 format and 1.44MB (3.5") disk. The format of the magnetic disks shall be MS-DOS Extended FAT. FAT-32 format disks are not acceptable. In order to speed contract execution, interim submissions of electronic deliverables via electronic mail may be directed by the Contracting Officer. In all cases submission of final deliverables shall be on physical media.

B.1.1 Disks shall be submitted with the final hard copy of the drawings and specifications or other documents. No disk shall contain documents from more than one USCG project.

B.1.2 If 3.5" floppy disks are used, drawing files, specification files, photo files, and other files shall be segregated by submitting them on separate disks. In the case of CD-ROM media, all files shall be contained on the same disk and shall be stored in different folders (i.e. folders named 'drawings' for drawings, 'specifications' for specifications, 'photos' for photos, etc.). CD-ROM media will be provided in a jewel case, properly marked.

B.1.3 Physical media shall not contain compressed or "zipped" files.

B.1.4 If directed by the Contracting Officer, files shall be delivered via email attachment. Emailed files shall be "zipped" into compressed archive files using the PKWare™ .zip file format. No single email may exceed 2 MB in size. If the submission is greater than 2 MB, then it shall be broken into multiple 2MB .zip files and each .zip file shall be mailed in separate a email message. The primary email message shall contain a manifest of the delivered files including all information described in paragraph A.

B.1.5 Project drawings shall be submitted in a single three ring binder consisting of:

- a. Exterior cover with Project Name & Location, Project Number, Date of Submittal, A-E Name, Level of Drawing (PPR-B, Schematic Design, Final Design, Record Conditions, etc.).
- b. Binder Edge label showing Project Name, Location and Date.
- c. CD-ROM containing individual drawings, labeled per B.1.5.a. above.

- d. 8 1/2" x 11" print of each drawing contained on CD-ROM.

**NOTE: A-E is responsible for including the drawings done by their sub-contractors. Incomplete submittals shall be returned at the A-E expense for correction.**

**B.2 Media Labels:** All disks submitted to the Coast Guard will be marked with a complete project description, project number, all file names (only on floppy), date of the submission, submittal percentage, disk format capacity.

**B.3 Electronic File Size:** All files delivered shall be of a reasonable size. Reasonable size means the size that a file would be if a professional computer user prepared the document applying high standards of workmanship and care. In most cases document files of excessive size are caused by improperly inserted bitmap images or inserting bitmap images with excessive dots per inch (dpi) ratios. Drawing files of excessive size are generally caused by incorrect hatch pattern scaling or by a drawing not being fully purged and then 'wblocked'. Deliverables containing files of unreasonable size will be rejected. To define expected reasonable size each file type covered in this specification is given a normal file size and a maximum file size limit in megabytes (MB). The USCG expects that file sizes will be near normal size in most cases. Files of a size near the maximum size are considered an extreme case and are due to a special situation that cannot be mitigated. In any case, deliverables with a file of a size greater than the given maximum file size limit will be rejected unless prior approval is obtained from the Contracting Officer.

**B.4 Computer Viruses.** All delivered files shall be free from known computer viruses. Due diligence must be exercised. Deliverables containing viruses shall be rejected. Damage caused to USCG equipment by received products will be the responsibility of the A-E. Cost of repair or replacement may be levied at the discretion of the Contracting Officer.

**B.5 Copyrighted Material.** No delivered files shall contain copyrighted material. Material in delivered files shall be in the public domain and be freely usable and copy-able without threat of copyright infringement. If the Contracting Officer specifically directs that copyrighted materials be delivered electronically, the contractor shall 1) pay all license fees for the copies delivered, 2) clearly mark the materials as copyrighted, 3) indicate on the delivery media that it contains copyrighted material, and 4) mark the materials with the limitations of use.

**B.6 Rejection of Deliverables.** As stated in Paragraph A, deliverables not meeting the requirements of this specification section will be rejected. The contractor will be required to correct and resubmit deliverables that meet the requirements of this specification section. Rejection may be in whole or in part at the discretion of the Contracting Officer. The Contracting Officer will provide a punch list of items requiring correction.

**B.7 Government-Furnished Materials.** It is the Government's intention to provide electronic materials to the Contractor which meet the specifications stated herein. The Government, however, reserves the right to furnish electronic materials to the Contractor which are not in conformance with these specification if it is in the best interest of the Government. The Contractor shall bring any Government-furnished materials into compliance prior to submitting them as contractually required electronic deliverables. Any effort by the Contractor to bring Government-furnished materials into

compliance, must be included in the bid or fee proposal and shown as a separate line item titled 'GFM Compliance Effort'. The Government will notify the Contractor that it intends to furnish materials not meeting this specification at the time the IFB or RFP is issued.

## C. CAD Drawing Requirements.

### C.1 General.

All drawings shall be prepared in accordance with this guide and the National CAD Standard (NCS) published by the National Institute of Building Sciences. The current version of the published standard can be obtained from the NIBS web site: <http://www.nibs.org>. The standard published by the Tri-Services CADD/GIS Technology Center (complies with the National CAD Standard) can be obtained at: <http://tsc.wes.army.mil/products/standards/aec/intro.asp>

The FD&CC Pacific web site, [www.uscg.mil/mlcpac/fdccc/contracting/index.html](http://www.uscg.mil/mlcpac/fdccc/contracting/index.html), contains documentation standards, instructions and downloadable files for providing documents consistent with our practices and procedures. **Drawing files that do not comply with these published standards will be returned for correction at the A-E's expense, see Paragraph A.** Contact the project Contracting Officer for questions and clarifications.

The A/E shall show all the information necessary to be consistent with those generally recognized by the construction trades and consistent with the representations as found in Architectural Graphic Standards by Ramsey Sleeper publishers.

### C.2 CAD Standards.

All drawing for Schematic design phases, and beyond must be produced using this standard in conjunction with AutoCAD™ Release 2002. FD&CC Pacific cannot accept object enabled drawings at this time. Drawings that were created architectural, civil, mechanical or other discipline specific products MUST not include imbedded objects.

Drawing files may be submitted for routine standards review at any time at the Governments convenience. Contact the EIC for schedule.

***The A-E shall be responsible for the drawing format and documentation submittal of all project sub-consultants.***

**C.2.1 External References.** No external references (XREFs) may be included in the completed drawing. Prior to submission all XREFs shall be bound to each drawing file using the 'insert' method.

**C.2.2 Attached Images.** Drawings which have image files attached shall be delivered with all the attached images. Attached image files shall be named with the drawing name as a prefix and image number as a suffix (e.g. 12X34567\_A1\_001.tif, 12X34567\_A1\_002.jpg, 12X34567\_A1\_003.gif, etc). See section paragraph 1.2.3 below for drawing file naming

conventions. Attached images shall not have the folder path stored but shall reference the images out of the same folder as the drawing file. Valid image formats and resolutions are shown below in paragraph C.2.11.

**C.2.3 Lineweights.** Color, Lineweight, and Plot Style shall be assigned to drawing elements 'BYLAYER' or 'BYELEMENT'. Using colors to assign lineweights at plot time is not acceptable unless otherwise approved by the Contracting Officer. See paragraph 1.2.11 for using color to assign 'halftone' at plot time. Only the following lineweights, which follow according to the National CAD Standard version 2.0 and the Tri-Services CAD Standard, will be used.

<b>Lineweight Description</b>	<b>Pen Width (in.)</b>	<b>Pen Width (mm.)</b>
Fine	0.007	0.18
Thin	0.010	0.25
Medium	0.014	0.35
Wide	0.020	0.50
Extra Wide	0.028	0.70
Option 1	0.040	1.00
Option 2	0.055	1.40
Option 3	0.079	2.00

**C.2.4 Line types:** Only line types as defined by the National CAD Standard version 2.0 or later shall be used. The LTSCALE factor shall be set to one (1). The PSLTSCALE factor shall be set to one (1). This allows the line type scale to be set automatically by the paper space viewport scale. **Screen color 8 is assigned for use as a halftone lineweight.**

**C.2.5 Layering.** The number of layers shall be kept to a practical minimum. More than 30 layers are considered excessive in a completed drawing. Layer names shall adhere to the National CAD Standard version 2.0 or later. Short form is preferred, long form will be accepted.

**C.2.6 Drawing Entities.** All completed drawings shall be fully purged of unused styles, layers, blocks, etc. All completed drawings shall be 'WBLOCKed' to a new file to remove any and all unused data and to insure a minimum file size.

**C.2.7 Text.** The primary font shall be "ROMANS". The TrueType™ font "ARIAL" may be used for cover sheet text, detail, section, elevation and plan titles. No third party or other Windows™ fonts are acceptable. Drawings delivered with fonts other than those described herein will be rejected

- a. Minimum actual plotted text size on full size sheets shall be 1/10" (.10") in order for the text to be readable on half size drawings. Minimum text size for dimensions shall be 1/10".
- b. Text shall be set to either a thin or medium lineweight. See paragraph C.2.3 above for lineweight designations.

**C.2.8 Third Party Applications.** All files shall be stripped of 3<sup>rd</sup> party application data (including proxy images). Drawings that display error messages on USCG computers about missing applications will be rejected. No third party text fonts (.shx) or linetypes (.lin) shall be accepted.

**C.2.9 File Conversion.** Files converted from other formats shall be checked by the contractor or A/E using the AutoCAD program for suitability and completeness prior to delivery to the USCG.

**C.2.10 Submittals.** Only one drawing shall be in each drawing file. This restriction can be excepted in the case of floor, site, or other plans that span multiple sheets. In this case the full floor or site plan shall reside in model space and each drawing title block shall be in a separate layout (paper) space.

Submitted drawings shall be final and an exact representation of the submitted hardcopy drawing. When the file is opened up, no manipulations shall be required to plot the finished drawing.

Submittals of project drawings shall meet section B.1.5.

**C.2.11 Revisions.** Revisions made to approved drawings shall be noted using revision marks, revision clouds, and heavy lines as defined in the National CAD Standard version 2.0 or later. In general changes shall be indicated by crossing out the original drawing elements and drawing in the change. For each revision the issue block in the title block shall record the revision mark number, revision date, revision description, and reviser initials. Revisions shall also record handwritten USCG approval signatures, initials, approval signature date, and any reviser initials in the title block or issue block using block lettering. Revisions shall only be made to a copy of the original or previously revised electronic CAD file. The revised file shall be named using the original file name appended with “\_rev1”, “\_rev2”, etc to indicate the number of the revision (e.g. 13X02123\_A5\_rev1.dwg). Due care shall be taken to insure that no changes are made to the electronic files between the original or revised issue and the next revision. No revisions shall be made to hardcopy drawings. Revised drawings shall be initialed in the issue block in blue indelible ink by a registered professional.

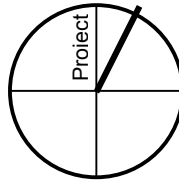
**C2.12 Record (As-built) drawings.** If required by contract or task order, Record (as-built) changes shall be recorded to the drawings. Redline drawings, as recorded by the construction contractor, will be provided by the USCG. Record changes shall be recorded as a standard revision with the following exceptions: the issue block description shall be titled “RECORD”; the drawing shall be marked in a prominent place near the lower right of the drawing with the word “RECORD” in ½” high “ROMANS” font with an bold lineweight; all sheets in the drawing set will be marked as above along with the issue block entry to record the date of the Record issue (even if no changes are required to the sheet). The Record file shall be named using the original file name appended with “\_record” (e.g. 13X02123\_A5\_record.dwg). Any Record drawing production effort by the contractor shall be included in the bid or fee proposal as a separate line item titled ‘As Built Drawing Production Effort’.

**C.2.13 Professional Registration Seal:** In order to accommodate creation of drawing revisions and Record using solely electronic CAD techniques the professional registration seal sans signature of the original drawing approver(s) shall be recorded in the electronic CAD file.

## C.2.14 Special Symbols.

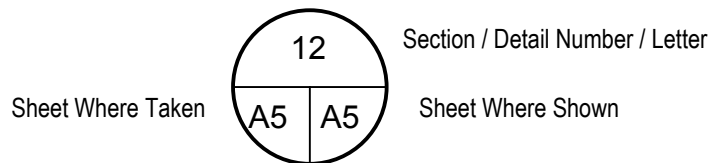
### C.2.14.1 North Arrows.

Use a cross hair type north arrow showing both compass north and project north. Use the following example. Each plan view must include a north arrow (Site & Vicinity plans, Floor Plans, Roof Plans, etc.).



### C.2.14.2 Section & Detail References.

Section and detail reference markers shall be a three-part symbol as shown below. Sections are generally named with a letter, details with a number.



**C.2.15 Model Space/Paper Space:** All submitted drawings shall be drawn to actual size and shall reside in AutoCAD™ ‘**model space**’. All title blocks, sheet borders, general notes, and other general annotation will reside in “**layout space**” (**paper space**). Drawings that are schematic in nature or state and vicinity maps may also reside in paper space.

**C.2.16 Plotting.** Plotting will done using the AutoCAD™ “Color –Dependent Plot Style Table”, (.ctb) format. The FD&CC plot table (CEC.ctb) can be downloaded from the FD&CC web site, [www.uscg.mil/mlcpac/fdccp/contracting/index.html](http://www.uscg.mil/mlcpac/fdccp/contracting/index.html). **Drawings that are not able to be plotted using this process will be returned for correction at the A-E’s expense.**

**C.2.17 Scale:** All site plans, plot plans, floor plans, contour maps and other drawings of this type shall be drawn to actual size in model space. The actual drawing scale will be determined by an exact setting of the paper space viewport scale. Use standard engineering/architectural scales in all cases.

1. The exception to the ‘standard scale’ rule is state and vicinity maps.
2. Site and plot plans shall be plotted at the largest engineering scale possible to fit on the desired sheet.
3. Each sheet shall contain a graphic scale for each different scale used on that sheet.

4. If any portion of a drawing is not drawn to scale, that drawing shall be marked 'NOT TO SCALE'.

### C.2.18 Drawing File Names.

Use the following file naming convention for all submitted drawings:

**Project Number \_ Sheet Number**

Examples: 13X02123\_A5.dwg  
13X02123\_A12.dwg

*Use underscores to separate project number from sheet number. Dashes, dots, tildes & etc. will not be accepted.*

**C.2.19 Sheet Borders & Title Blocks.** The use of USCG sheet borders & title blocks is mandatory. Borders (ANSI A through ANSI E sizes) can be accessed through the FD&CC Pacific web site. FD&CC Pacific uses title block attributes to populate a corporate drawing database; the information must be correct and consistent. DO NOT "RENAME" OR "EXPLODE" THE SHEET BORDER, this will cause the attribute information to be corrupted.

Contact the project EIC for the correct title block format & information. Files and instructions can be found on the FD&CC Pacific Web site [www.uscg.mil/mlcpac/fdccp/contracting/index.html](http://www.uscg.mil/mlcpac/fdccp/contracting/index.html).

**C.2.20 Sheet Naming.** Use only the single character discipline designator as shown below. Do not use dashes between the discipline identifier and the sheet number.



Note: For large projects, an alternative naming system may be used to easily insert additional sheets if necessary. Contact the Contracting Officer for more information.

## C.3 Specifications

**C.3.1 General.** Specifications shall be organized according to the CSI 16 division specification classification system. Specifications shall be delivered as editable Microsoft Word 2000 binary format document (.doc) files.

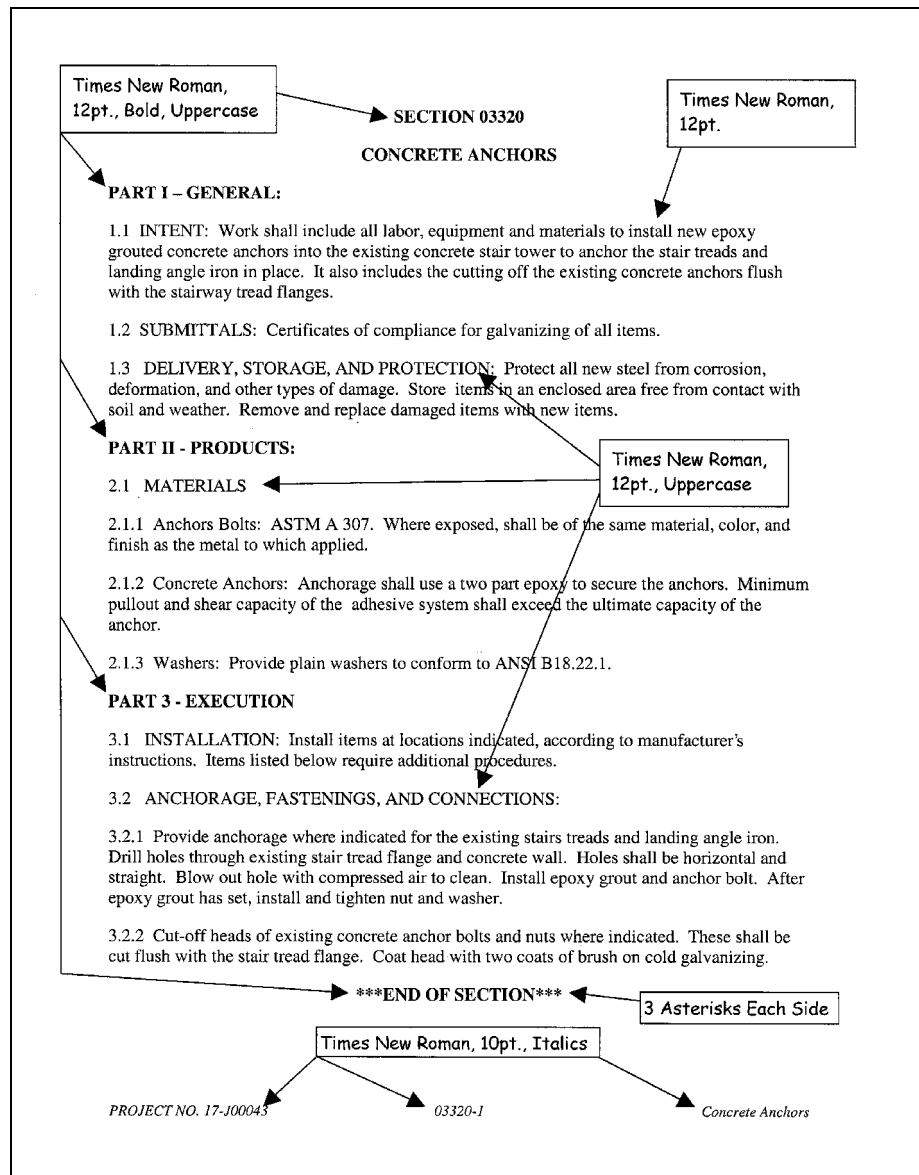
**C.3.2 Provided Materials.** Division 1 -General Requirements: Except as otherwise noted the Division 1 specifications will be supplied by the Coast Guard, except that the contractor shall supply section number 01010 titled "Scope of Work", section number 01012 titled "Special Requirements", and a completed and accurate "Submittal Status Log." The Division 1

specification sections will be provided by the Contracting Officer. The contractor shall ensure that provided materials meet format standards.

**C.3.3 Organization and Naming.** Specifications shall be organized and named as individual files. Provide documents in the following format, <Project number> \_ <specification number>

Ex. 13X02123\_09250.doc  
13X02123\_index.doc

**C.3.4 Text Sizes, Style & Footer.** Each page of every specification sections shall incorporate consistent text fonts and text sizes as seen below. A footer shall be used on every page following the example below. The footer will include project number, specification section & page number and specification name.





### C.3 Reports.

**C.3.1 General.** Reports shall be delivered as editable Microsoft Word 2000 binary format document (.doc) files and as Adobe .pdf files.

**C.3.2 File Naming.** Reports shall be named in the following format: *<project number> \_ <title>*

ex. 17X12345\_Kodiak Cargo Pier Investigation.doc

ex. 11F45678\_AIRSTA San Francisco Hazmat Survey.pdf

Use MS Windows™ file naming rules subject to the following limitations: When naming a file use title case and spaces. Do not use periods for abbreviations, acronyms, or initials. Keep file names (excluding extensions) 40 characters or less in length.

**C.3.3 File Organization:** Files shall be organized in a logical fashion such as by phase, chapter, and/or other distinct division, or as specifically required by the Contracting Officer. The number of files shall be kept to a reasonable minimum while keeping the file sizes within required limits. The complete report may be consolidated into a PDF file but the source .doc files are required to be delivered. If the consolidated report PDF files contain images, they shall be 'Print Optimized' using Adobe Distiller.

**C.3.4 Digital Images.** Images shall be inserted wholly into the report file and not attached. Prior to insertion, bitmap images shall be down sampled to a resolution suitable for the size of the image in the report. Suitability of inserted image files is governed by the requirements of paragraph 1.5. Images shall be inserted using the 'Insert-Picture-From File..' method.

**C.3.5 Index Tabs and Binding.** Reports shall be tabbed with labeled index tabs at major division points as described in paragraph C.3.3. Index tabs shall be durable paper with plastic laminate at wear and stress points or other Contracting Officer approved system. Reports shall be bound in comb bindings, 3 ring binders, or other Contracting Officer approved methods. In the case where the report front and back covers are exposed paper the paper shall be laminated in plastic on both sides of the paper.

**C.3.6 Quality.** Reports shall be professionally prepared and use high quality materials and techniques.

**C.3.7 Use of Color and Copies.** Use color is encouraged if it enhances the readability and quality of the information presented. Use color schemes the have high contrast which can be photocopied in black and white and retain readability and information integrity. Original report copies shall be in color and subsequent copies may be in black and white.

## D. File Naming Standards

### D.1 General

All electronic files produced under this contract will be named with in the following convention.

#### **Project Number \_ file description**

Examples:      13X02123\_costs.xls  
                  13X02123\_boringlog.doc  
                  13X02123\_sitephoto.jpg  
                  13X02123\_materials.pdf

*Use underscore ONLY to separate project number from sheet number. Dashes, dots, tildes & etc. will not be accepted.*

## E. Acceptable File Formats

The following formats are acceptable for submitted files under this contract. Other file types may be permitted with written permission from the project Contracting Officer.

- a. MS Word .DOC = General correspondence, specifications, meeting minutes, etc.
- b. MS Excel .XLS = Spreadsheets.
- c. MS Powerpoint .PPT = Presentations.
- d. MS Project .MPP = Project scheduling.
- e. MS Access .MDB = Database.
- f. Adobe Acrobat .PFD = Vendor / product information, code & standards (ANSI, ASTM, SMACMA, etc) information.
- g. AutoCAD .DWG = Drawings.
- h. AutoCAD .DWF = Drawing viewer.
- i. .JPG = Photos.
- j. .TIF = Scanned images.
- k. .ZIP = File compression & consolidation (use the Zip executable .EXE for large number of files).